very little evidence of the foliage having been stripped from the trees.

In Kansas City, Mo., the tornado began its work of destruction in the neighborhood of Eighteenth to Eighty-third and Main Streets, 3 small houses being demolished and about 10 damaged. In the vicinity of Troost and Tracy Avenues it practically destroyed a frame store and considerably damaged a few houses. Farther along its northeastward course of about 1½ miles, it damaged a house slightly here and there and broke off some limbs of trees to about Sixtieth and the Paseo, where its force became exhausted.

CASUALTIES

In Kansas.—Four killed; 40 injured, several dangerously; 100 rendered destitute. Property damage: 22 dwellings demolished; 53 damaged, some quite badly. Estimated property damage, $150,000, plus $10,000 damage sustained by the Southwest Bell Telephone Co.

In Kansas City, Mo.—No casualties of a personal nature. Property damage: Four small houses wrecked and 16 others more or less damaged. Estimated loss about $25,000.—*P. Connor.*

Wabaunsee and Morris Counties.—A tornado was observed between 4 and 4:30 p. m. 6 miles northeast of Harveyville, in the southeast corner of Wabaunsee County; it moved thence east-southeast over a path 12 miles long and 60 rods wide to the northeast part of Burlington County, where it disappeared. The greatest damage was inflicted in the last 3 miles of its path. A second tornado was observed at 4:15 p. m. a mile northeast of Dunlap in Morris County. This point is about 30 miles southwest of the point of origin of the tornado first described; it also moved in an east-southeast direction over a path about 28 miles long and from a few feet to 50 feet in width. Further details regarding all of these storms is given in table on page 337.—*B. R. Laskowski.*

NOTES AND ABSTRACTS

ON THE MECHANISMS OF CYCLONES AND ANTICYCLONES[1]

By T. KOBAYASI

The author points out that, according to the Bjerknes theory, two air currents from different sources meet in a cyclone and consequently the latter is always accompanied by two lines of discontinuity. In actual cases, however, it is further pointed out, some cyclones lack one or both such lines whence the author considers cyclones as circular vortices and seeks to find the causes from which lines of discontinuity are formed.

His studies lead him to consider as the much more plausible of the theories of the mechanism of a cyclone that one which gives the circulation up to 2 to 4 km. a form resembling that of a vortex in a stream. He has calculated for many cyclones the height at which they acquire this character and finds the level in winter to be between 2 and 3 km. and in summer between 2.5 and 4 km. and these heights he considers as the limits of the atmosphere influenced by the temperature at the earth's surface by means of turbulence and convectional motions. The full account is to be published in Rep. Aeronaut. Research Inst. Tokyo Imp. Univ. Vol. II, No. 20.—*A. J. H.*

RECORDER OF FREQUENCY OF ATMOSPHERICS: ITS USE IN METEOROLOGY[2]

By R. BUREAU, A. VIAUT, and A. GRET

(Abstract reprinted from *Science Abstracts*, May 25, 1927, 1308, pp. 372-373)

In the apparatus used each atmospheric functions a relay, and a current is conveyed through an electromagnet to operate the recording part. A curve is traced whose ordinates are proportional to the frequency of the atmospherics. The curves between August and December, 1926, covered many types of atmospherics and many meteorological situations, but a sharp relationship is shown between the passage of surfaces of discontinuity and the evolution of atmospherics.

In one striking case the atmospherics coincided exactly with the moment at which each of a series of squalls passed over.

It is concluded that (1) the source of a very great number of atmospherics, is in the atmosphere in the immediate vicinity of the wireless-telegraph station, and (2) registrations of atmospherics form one of the most powerful means for the analysis of the detained structure of the meteorological discontinuities, and, in particular, the principal and secondary cold-front discontinuities.—*R. S. R.*

NEW IRRIGATION PROJECTS IN ARIZONA AND NEW MEXICO[1]

Larger and larger areas of desert land are being reclaimed in Arizona by the building of a chain of dams in Salt River and its tributaries for the further conservation and use of water both for power and irrigation. The two separate and distinct uses are made possible by the very simple expedient of constructing a low diversion dam immediately below the power house at the foot of the storage dam so that the water after passing through the turbines is again caught and diverted for irrigation purposes.

The Roosevelt dam—a Federal project—was completed in 1911. Since that time a chain of dams below it have been completed, that known as Horse Mesa, which backs water up to the foot of the first-named being the most recent. Dams downstream from Horse Mesa are Mormon Flat, Stewart Mountain, Granite Reef, and Joint Head diversion.

What is to be known as Lake Pleasant, a body of water 8 miles long and 2 wide, impounding 173,500 acre-feet for the irrigation of 40,000 acres of land, has been created on the Agua Fria River near Phoenix, Ariz.

Another privately financed project is that known as Bluewater-Toltec of Valencia County, N. Mex. This project includes a storage dam at the head of Bluewater Canyon that will impound 53,000 acre-feet and provide irrigation for 10,000 acres of land.

A beginning has been made in the construction of the Coolidge Dam, San Carlos project, Ariz. This dam when completed will store 1,285,000 acre-feet.

[1] In Proceedings Imperial Academy, Japan 3: no. 2, p. 72.
[2] Comptes Rendus, 184: 157-158, January 17, 1927.

[1] Condensed from Modern Irrigation, June, 1927.